

Claim Objections

The Examiner has objected Claim 36 due to a grammatical error on line 2. Applicants have corrected the error by inserting a space between InP and GaSb. Therefore, Applicants respectfully request the Examiner to withdraw this objection.

Claim Rejections 35 U.S.C. § 112, Second Paragraph

The Examiner has rejected claim 39 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Applicants have amended claim 39 to resolve the indefiniteness rejection set forth by the Examiner. Claim 39 of Applicants' claimed invention, as amended, clearly defines the material term as Hafnium Nitride. Also, Applicants have corrected this error in other relevant portions of the application.

In light of the foregoing, Applicants respectfully request the Examiner to withdraw the rejection to claim 17 under 35 U.S.C. § 112, second paragraph.

Claim Rejections 35 U.S.C. § 102 (a)

The Examiner has rejected claims 31-44 under 35 U.S.C. §102 (a) as being anticipated by Shibsaki et al. (U.S. 5,430,310). It is Applicants' understanding that Shibsaki et al. fails to teach or reduce to practice Applicants' invention as claimed in claims 31-44.

Claims 31-41, Applicants teaches a method of forming a transistor including: a narrow bandgap semiconductor film; a gate dielectric layer located

over the substrate; a gate electrode on said gate dielectric; a pair of source/drain regions adjacent to narrow bandgap semiconductor film; wherein said gate electrode and gate dielectric are over a portion of said source/drain regions.

Figure 2 is an example of claims 31-41.

Applicants claim a transistor with the channel region formed of a narrow bandgap semiconductor film with gate structure extending over the channel region and over a portion of the source/drains. Shibasaki et al., however, teaches a method of forming a transistor including (shown in figures 3, 8, 10-22): a narrow bandgap semiconductor film over an insulating substrate (col. 8, lines 65-68; col. 15, lines 51-54); a gate dielectric layer over said narrow bandgap semiconductor film (figures 3, 8, 10); a gate electrode on said gate dielectric; and a pair of source/drain regions proximate to said narrow bandgap semiconductor film (see also column 10, line 51 to column 12, line 24; column 13, line 44 to column 19, line 14). Shibasaki et al. fails to teach a gate dielectric and gate electrode extending over a portion of source and drain in conjunction with the previous specified device features. As such, Shibasaki fails to teach every element of Applicants' invention in claims 31-41.

In claims 42-44, Applicants teach a method of forming a transistor including: an InSb alloy film on an insulating substrate; a high k gate dielectric film on InSb alloy film; a metal electrode on said gate dielectric; and a pair of source/drain regions on opposite sides of said gate electrode. Thus, applicants teach a method of forming a transistor which uses an InSb alloy film as a narrow bandgap semiconductor film along with a high k dielectric film and metal electrode.

It is Applicants' understanding that Shibasaki et al. teaches a method of forming a transistor with a channel region 3 formed from InAs (illustrated in figures 3, 8, and 10). Additionally, Applicants understand Shibasaki et al. to

teach a MIS type FET using the second compound semiconductor layer 4 as an insulating barrier rather than Applicant's disclosure of a high k dielectric. Moreover, a high k dielectric is neither mentioned nor anticipated by Shibasaki et al. Therefore, since Claim 42 is not anticipated, taught, or disclosed by Shibasaki et al., dependent claims 43 and 44 should be declared valid upon the validity of base claim 42.

Conclusion

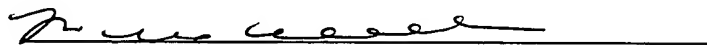
Applicants believe that all claims pending are now in condition for allowance so such action is earnestly solicited at the earliest possible date.

If there are any additional charges, please charge Deposit Account # 02-2666. If a telephone interview would in any way expedite the prosecution of this application, the Examiner is invited to contact the undersigned at (408) 720-8300.

Respectfully submitted,

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